

# **Calculations of CVP-Delivered Salt Loads (Section D)**

## **MAA Draft Compliance and Evaluation Plan**

**July 28, 2009**  
**1:30 pm – 3:30 pm**

# Management Agency Agreement

- Requirement of the Basin Plan (Salinity and Boron TMDL for the Lower San Joaquin River)
- Executed in November 2008 by Regional Water Board and Reclamation
- Cooperative implementation, initially a 2 year monitoring, assessment and reporting program
- Contains several reporting agreements
- Contains a goal of 25 percent reduction and/or offset of salts transported to basin by CVP
- Refers to Reclamation Action Plan

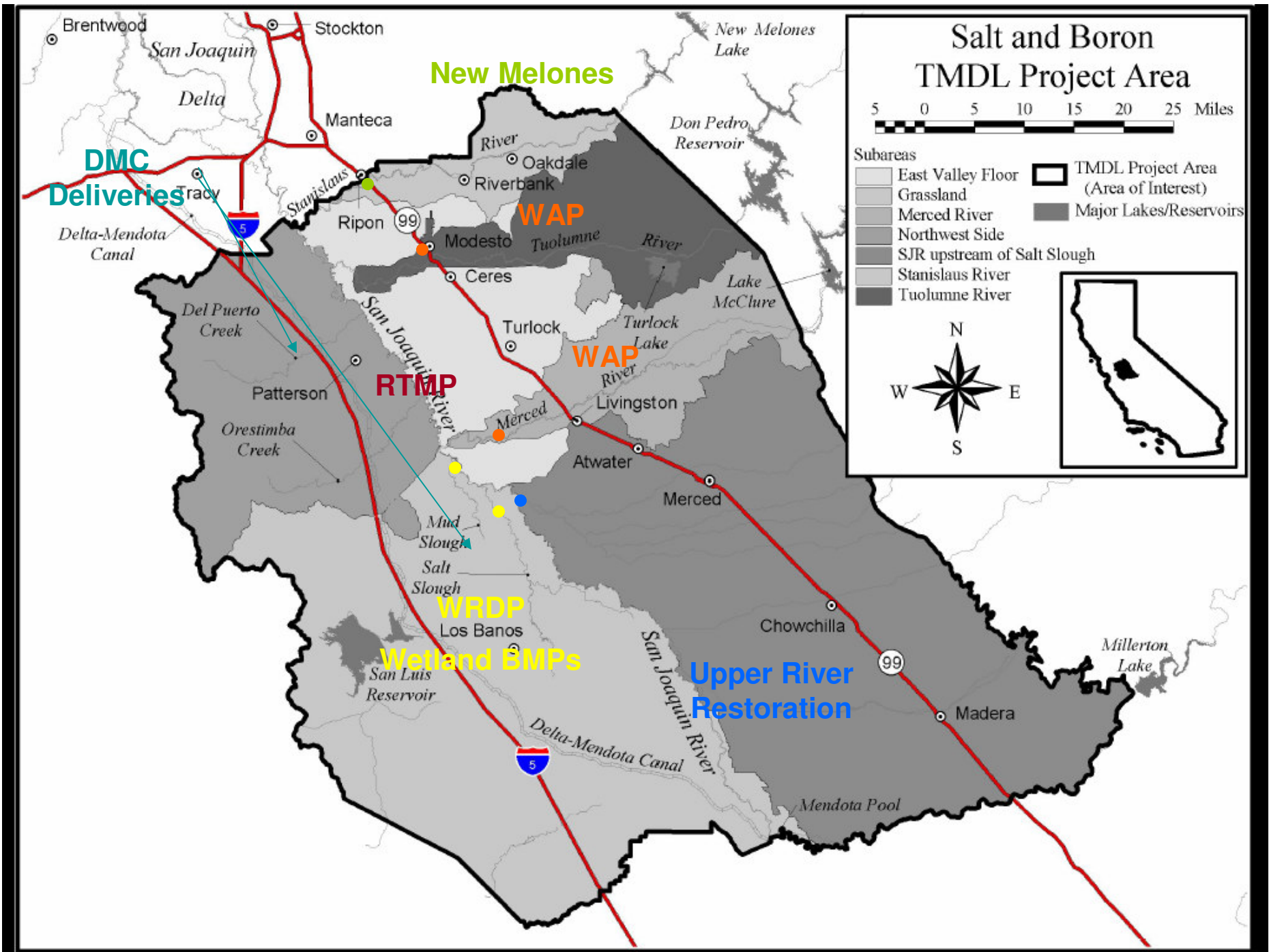
# **Draft Compliance Evaluation and Monitoring Plan Contents (2008 monthly data)**

- Action Plan Elements
  - Status
  - Quantification of Potential Load Offsets
- DMC Supply Water Load
  - Methodology for Calculations
- Future Reclamation Actions
  - Status
  - Quantification of Potential Load Offsets
- Vernalis Water Quality
- Summary of Potential Offsets to DMC Loads
- Proposal for Continuing Public Participation

# Salt and Boron TMDL Project Area



- Subareas
- East Valley Floor
  - Grassland
  - Merced River
  - Northwest Side
  - SJR upstream of Salt Slough
  - Stanislaus River
  - Tuolumne River
- TMDL Project Area (Area of Interest)
- Major Lakes/Reservoirs



# Draft Compliance Evaluation and Monitoring Plan

- First draft of Plan submitted on January 1, 2009
- Second draft submitted to Executive Director of Regional Board for approval on July 1, 2009
- Next draft will be submitted on January 1, 2010
- Final Compliance Evaluation and Monitoring Plan due to Regional Board by July 1, 2010

# CVP-Delivered Salt Load Agenda

- Background
- Regions of CVP Deliveries
- Data Sources
- Regions by TMDL Sub Areas
- Excess Load Calculation Methodology
- Monthly Loads, 2000 - now

# **CVP-Delivered Salt Load Background**

- Load allocation established for salts in DMC irrigation water deliveries
- Load allocation set to offset or reduce all salt loads above “Sierra quality” water (52 mg/L TDS)
- CVP water supply allowance granted to recipients of DMC water, 50% of water supply load
- In TMDL calculation, CVP loads were based on DWRSIM modeling and Delta conditions pre-1997

# **CVP-Delivered Salt Load**

## **Regions of Deliveries**

Reach 1: Downstream of Jones Pumping Plant but Upstream of Check 13 (O'Neill Forebay)

Reach 2: Downstream of Check 13 but Upstream of Mendota Pool

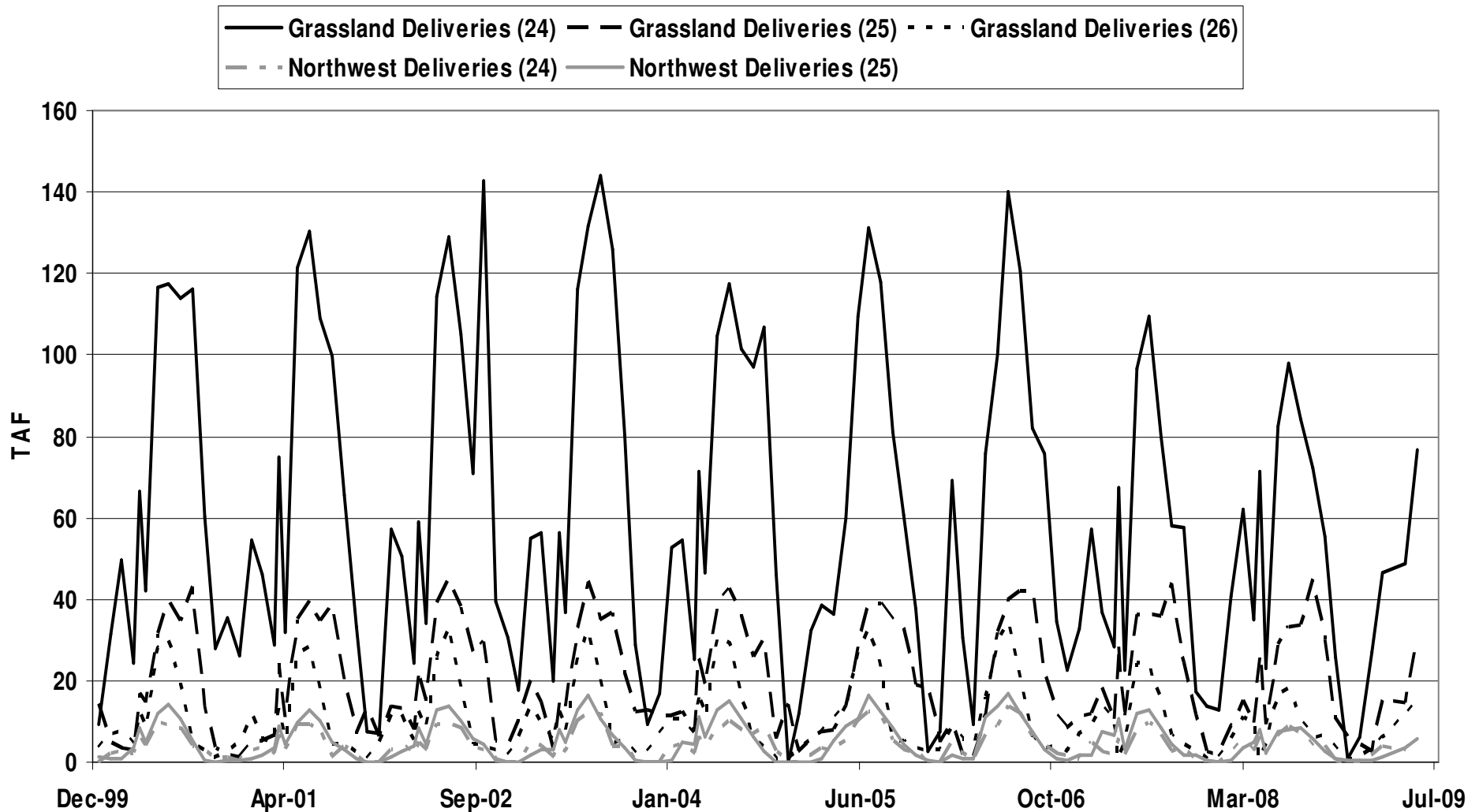
Reach 3: Mendota Pool



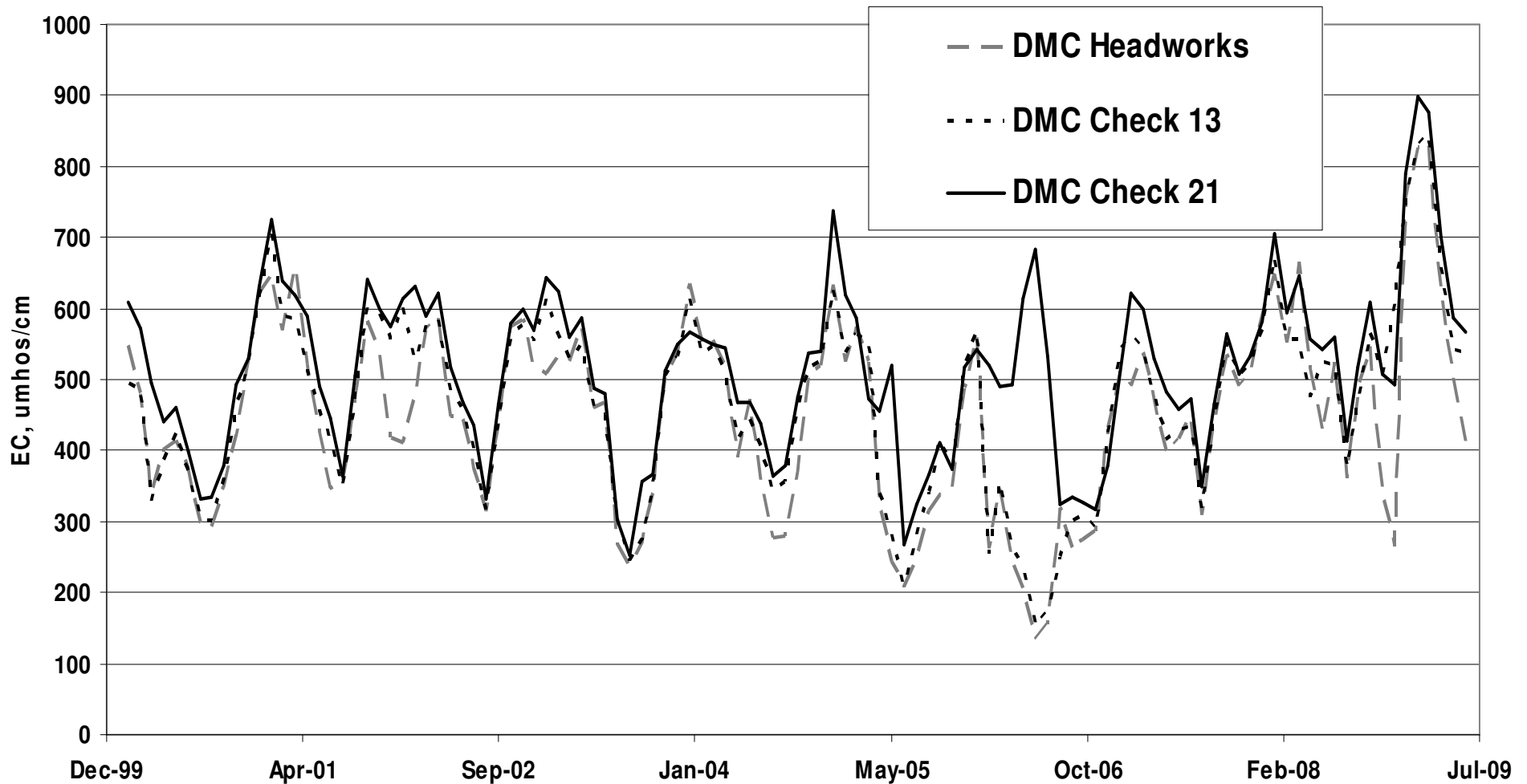
# CVP-Delivered Salt Load Data Sources

- Reclamation Central Valley Operations Office prepares monthly water supply delivery reports :  
[http://www.usbr.gov/mp/cvo/CVO\\_Rpts.html](http://www.usbr.gov/mp/cvo/CVO_Rpts.html)
  - Table 24: San Joaquin and Mendota Pool
  - Table 25: Delta-Mendota Canal
  - Table 26: San Luis and Cross Valley Canals
- Daily salinity measurements by Reclamation are publicly available at <http://www.usbr.gov/mp/cvo/wqrpt.html>
  - DMC Headworks/Jones Pumping Plant (TDS)
  - DMC Check 13/ O'Neill Forebay Outlet (EC)
  - DMC Check 21/ Mendota Pool (TDS)

# CVP-Delivered Salt Load Delivery Data



# CVP-Delivered Salt Load Water Quality Data



# **CVP-Delivered Salt Load Regions by TMDL SubArea**

- TMDL breaks region into 7 subareas
- Reclamation calculated CVP-Delivered Salt Load by SubArea
- 7 CVP contractors are not entirely within 1 subarea (Table 6)
- GIS used to calculate portion of area within each subarea, delivery quantities proportioned by area to estimate delivery to subarea

# CVP-Delivered Salt Load Regions by TMDL SubArea (Table 6)

Recipient	Table	Total Acres	Grassland		Northwest	
			Acres	Percent	Acres	Percent
CDFG - China Isl Unit	24, 25	3,699	3,174	86%	525	14%
Central California ID	24, 25	149,814	129,805	87%	20,007	13%
Columbia Canal Co	24	16,719	15,762	94%		0%
Del Puerto WD	25	54,673	11,656	21%	43,017	79%
USFWS - San Luis	24	28,048	23,712	85%		
Banta-Carbona ID	25	16,728			1,055	6%
West Stanislaus ID	25	22,192			21,291	96%

# CVP-Delivered Salt Load

## Excess Load Calculation Methodology

DMC Load Calculation From the Basin Plan Amendment  
Table IV-8 Summary of Allocations and Credits:

$$LA_{DMC} = Q_{DMC} * 52 \text{ mg/L} * 0.0013599$$

Where:

$LA_{DMC}$  = Load Allocation of salts, in tons

$Q_{DMC}$  = monthly amount of water delivered to  
Grassland and Northwest side subareas, in  
acre feet

52 = “background” TDS of water in the San Joaquin  
River at Friant per the Basin Plan

0.0013599 = factor for converting units into tons

# CVP-Delivered Salt Load

## Excess Load Calculation Methodology

Calculation of Excess DMC Load (Load above Allocation):

$$EL_{DMC} = Q_{DMC} * (C_{DMC} - 52 \text{ mg/L}) * 0.0013599$$

Where:

$EL_{DMC}$  = excess salt load above the Load Allocation ( $LA_{DMC}$ ), in tons

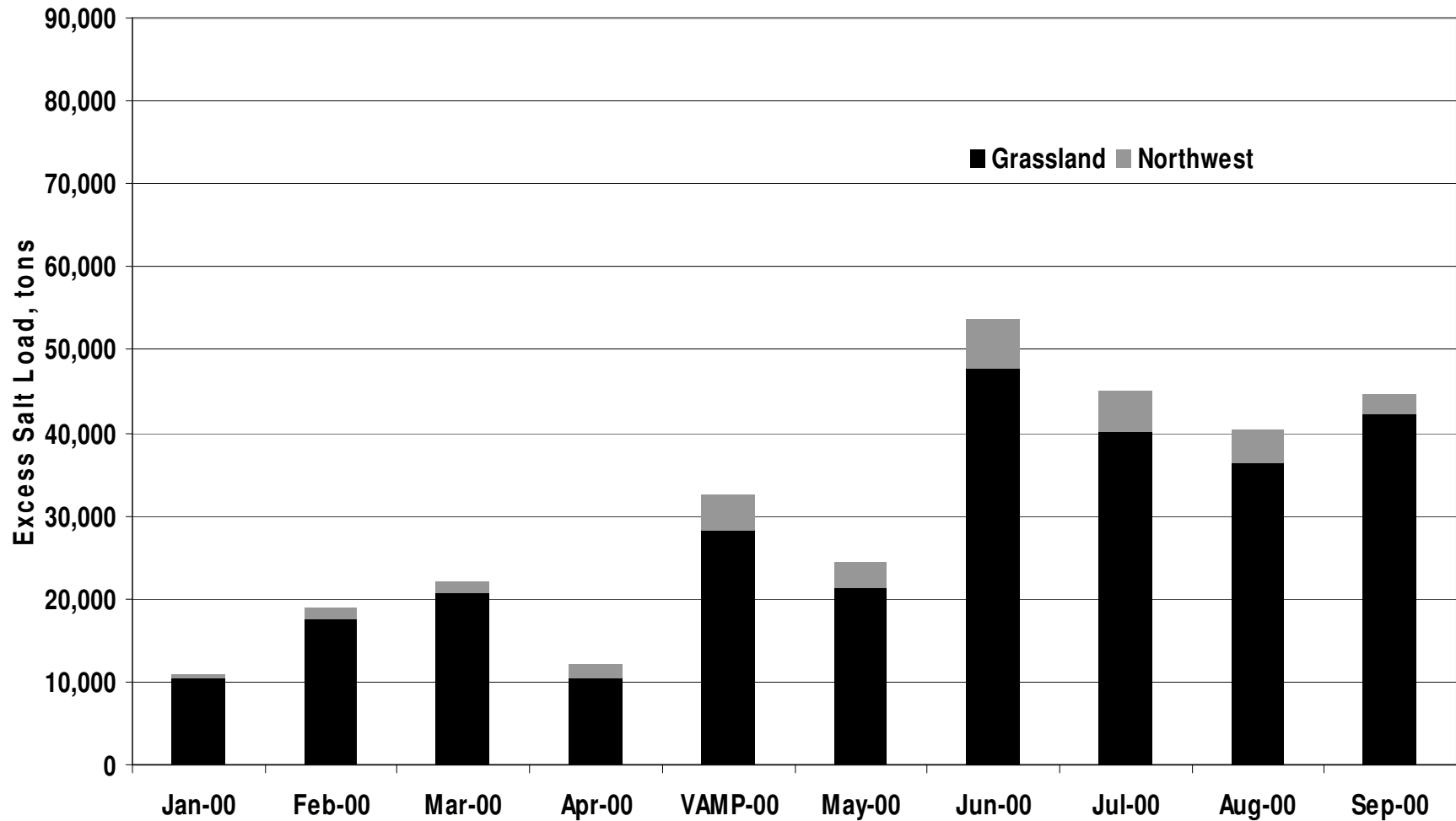
$Q_{DMC}$  = monthly amount of water delivered to Grassland and Northwest side subareas, in acre feet

$C_{DMC}$  = monthly average (arithmetic mean) of salinity of the water delivered to Grassland and Northwest Subareas, in mg/L

52 = “background” salinity of water in the San Joaquin River at Friant per Basin Plan

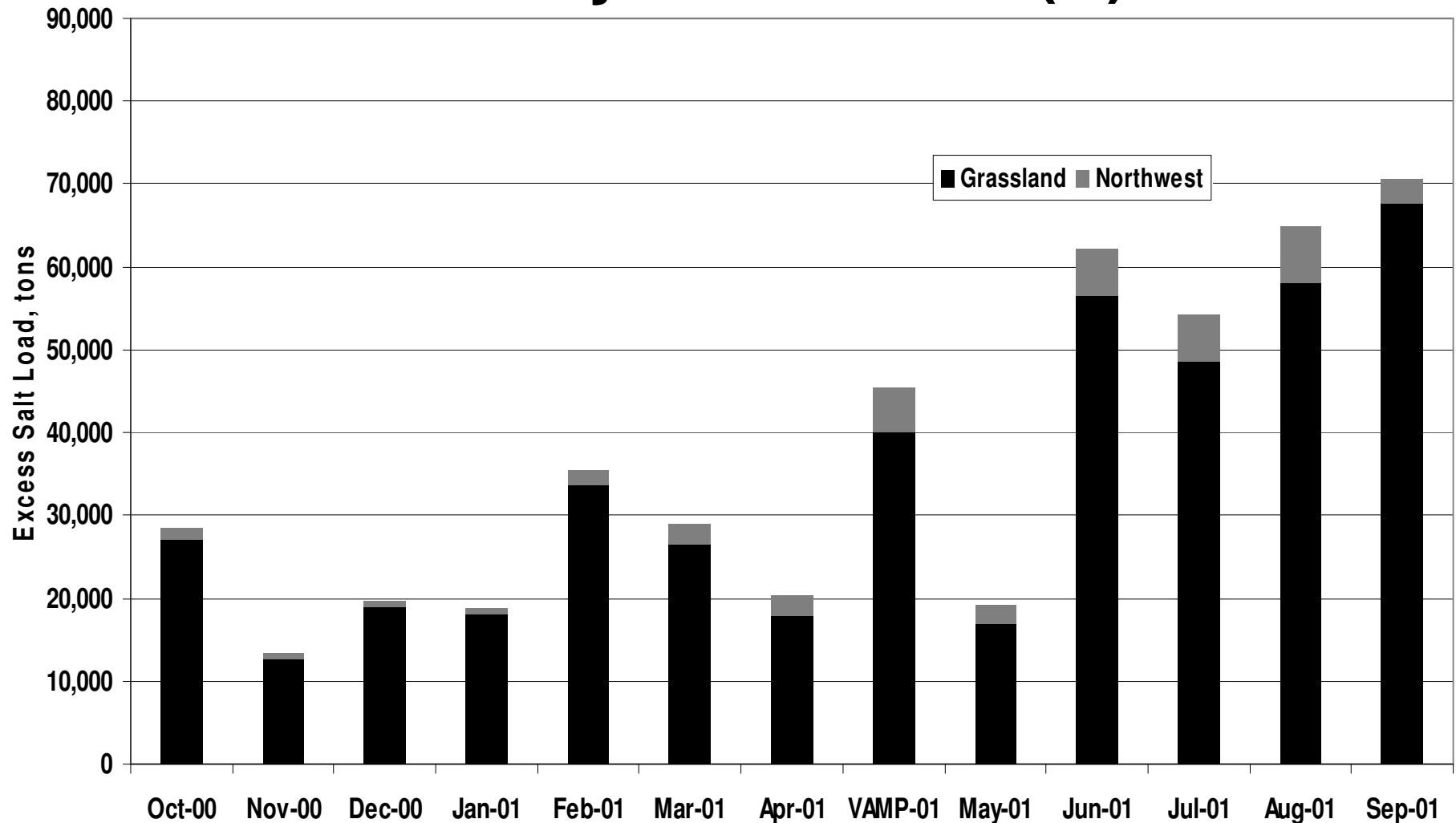
0.0013599 = factor for converting units into tons

# CVP-Delivered Salt “Excess” Load Monthly Loads 2000 (AN)

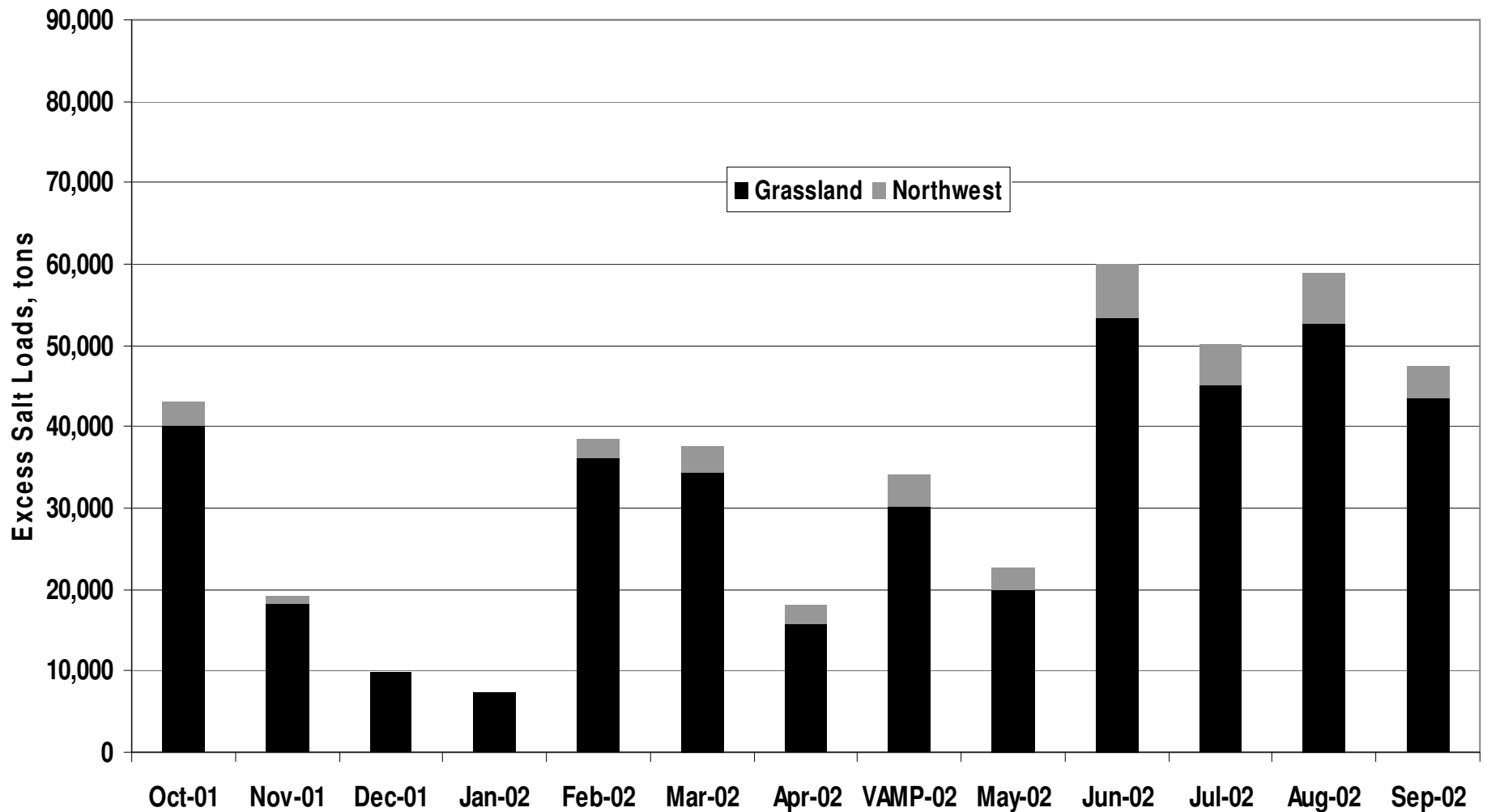




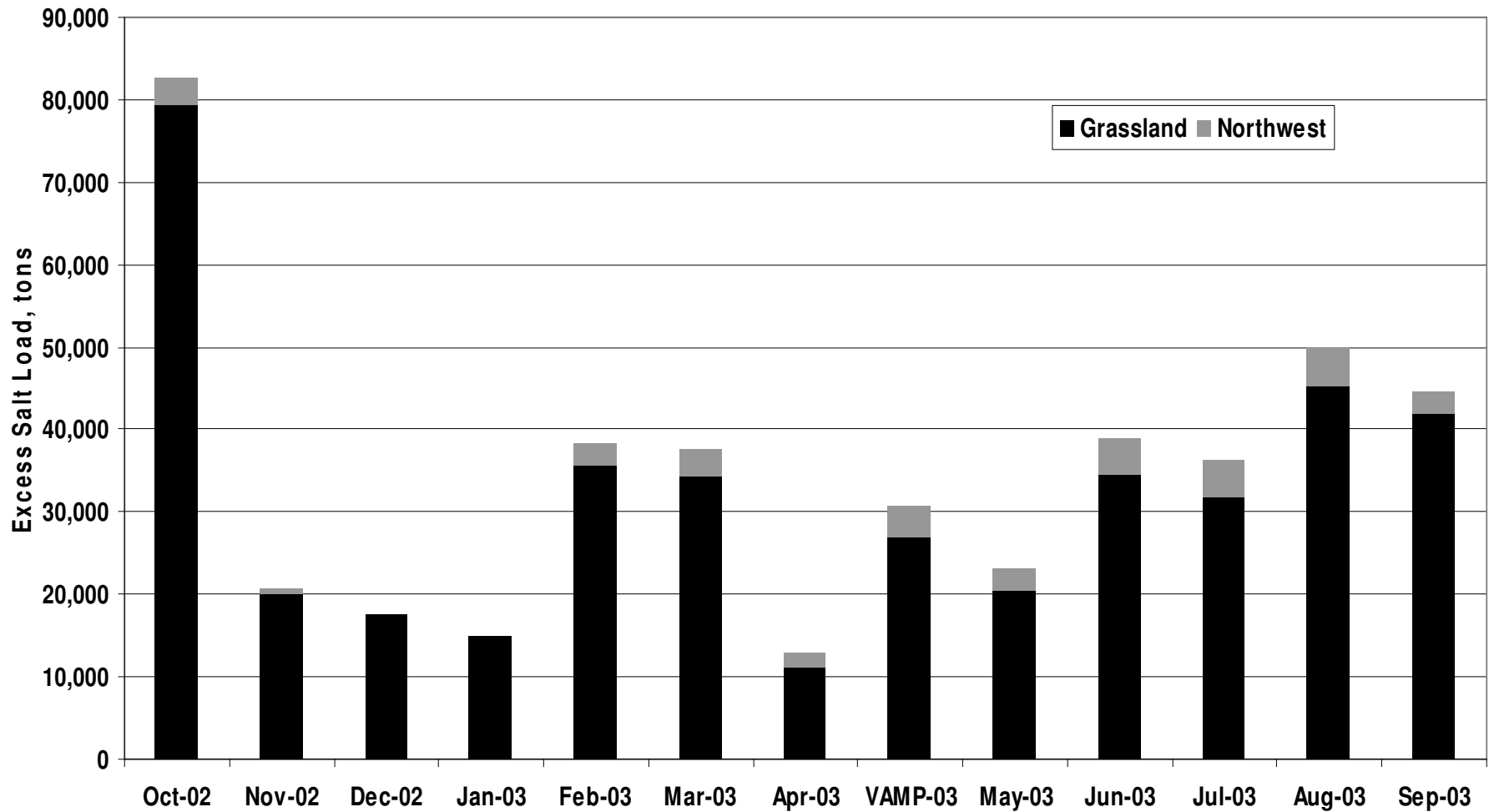
# CVP-Delivered Salt “Excess” Load Monthly Loads 2001 (D)



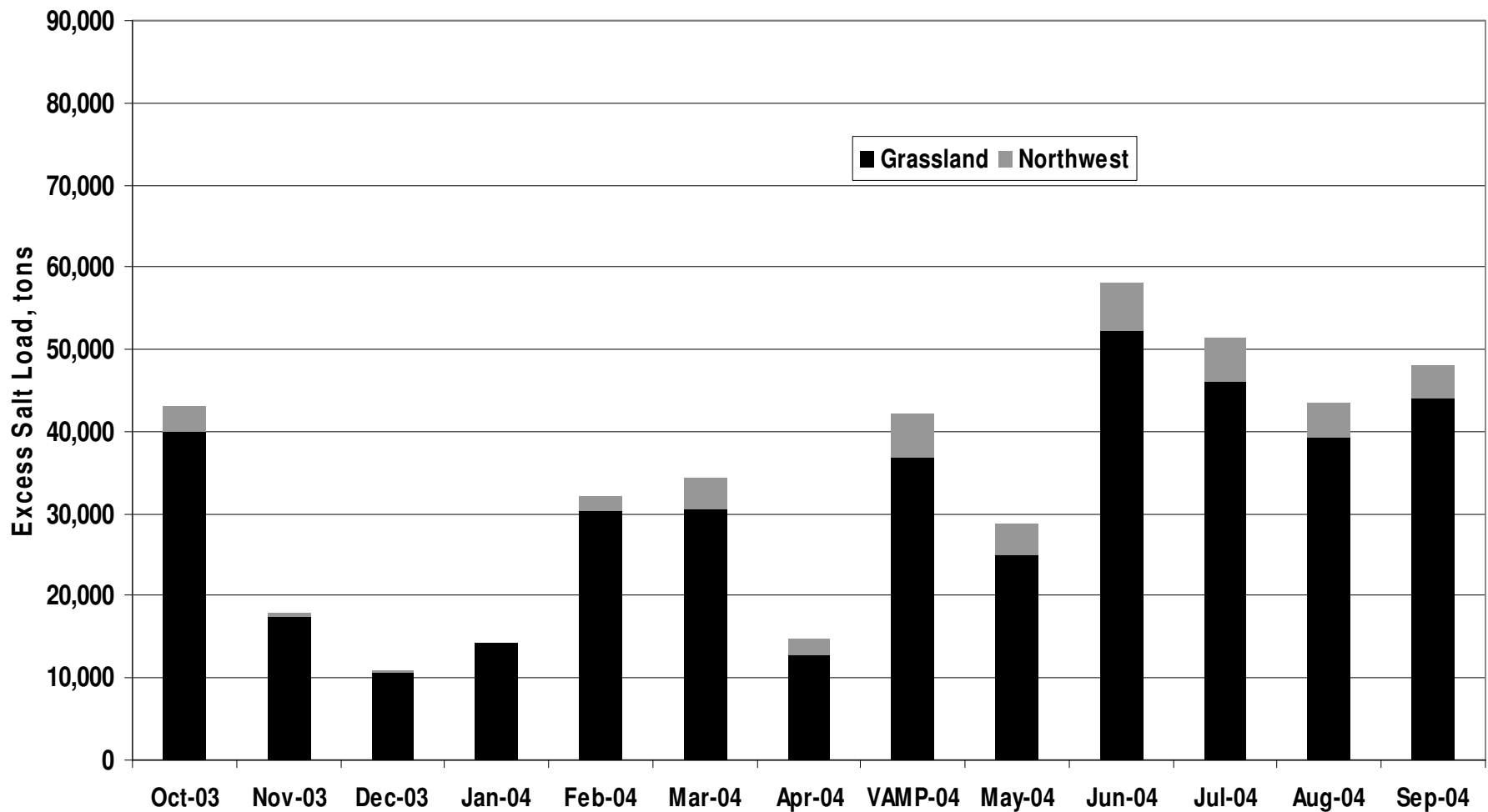
# CVP-Delivered Salt “Excess” Load Monthly Loads 2002 (D)



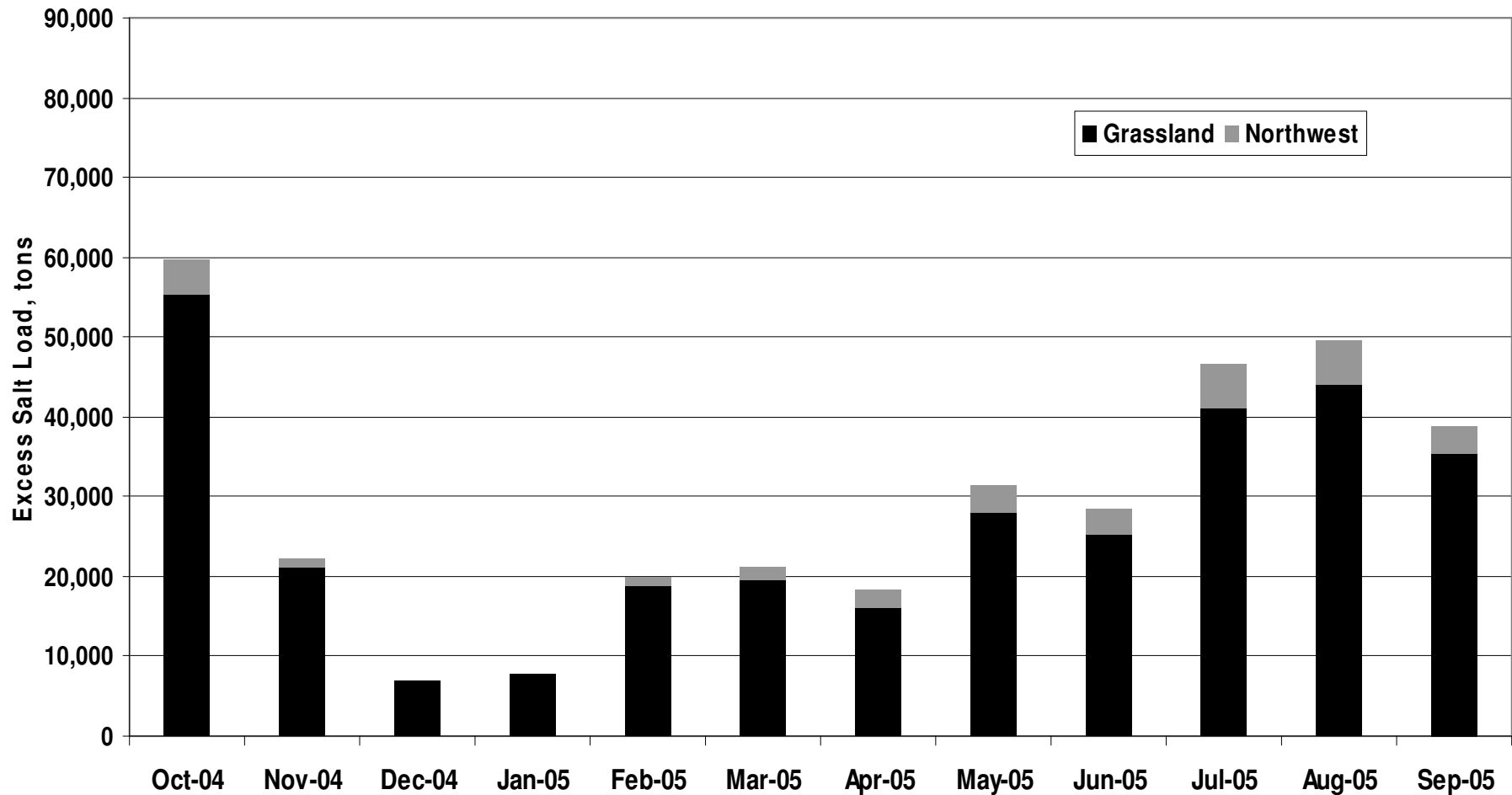
# CVP-Delivered Salt “Excess” Load Monthly Loads 2003 (BN)



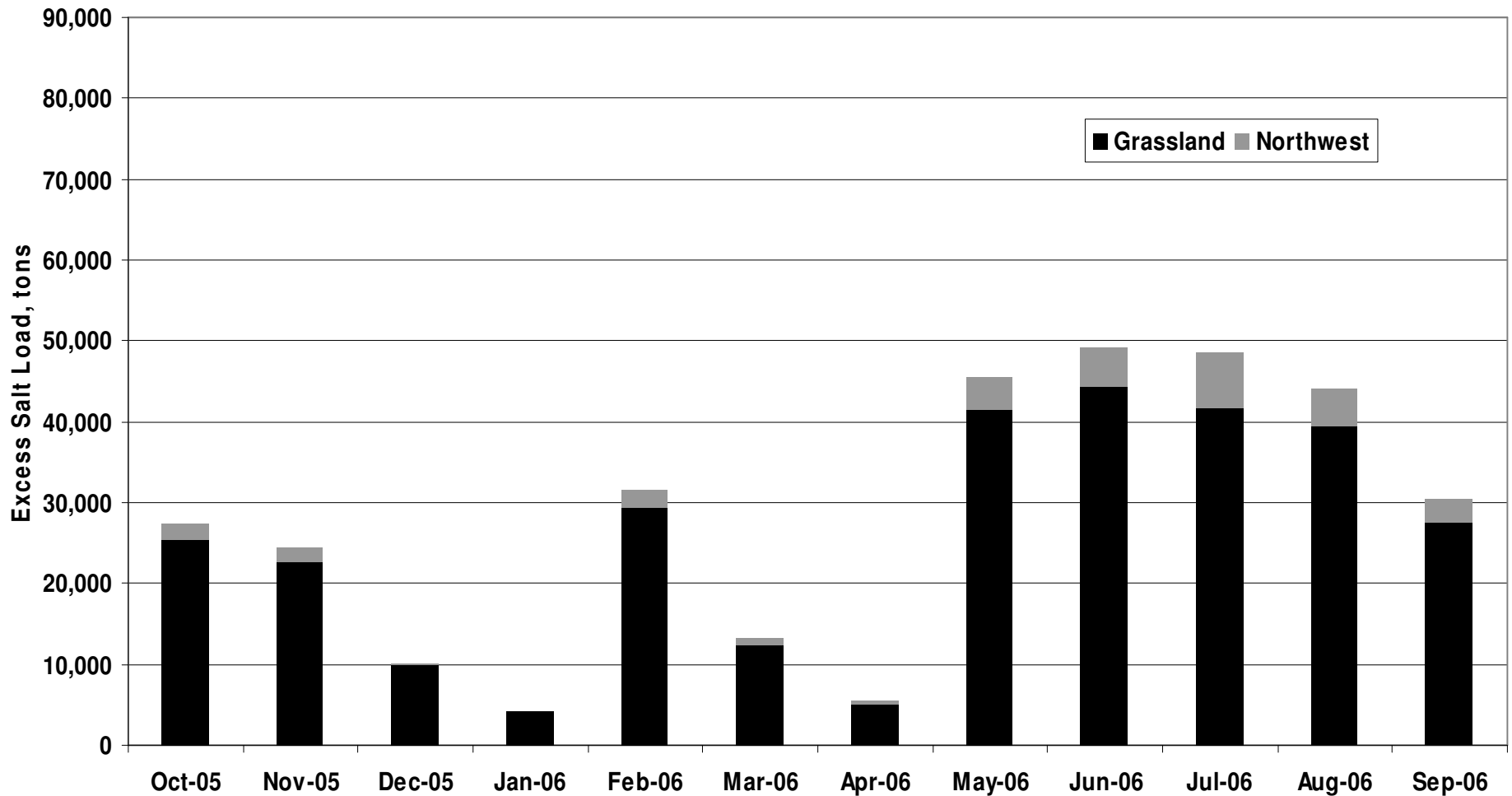
# CVP-Delivered Salt “Excess” Load Monthly Loads 2004 (D)



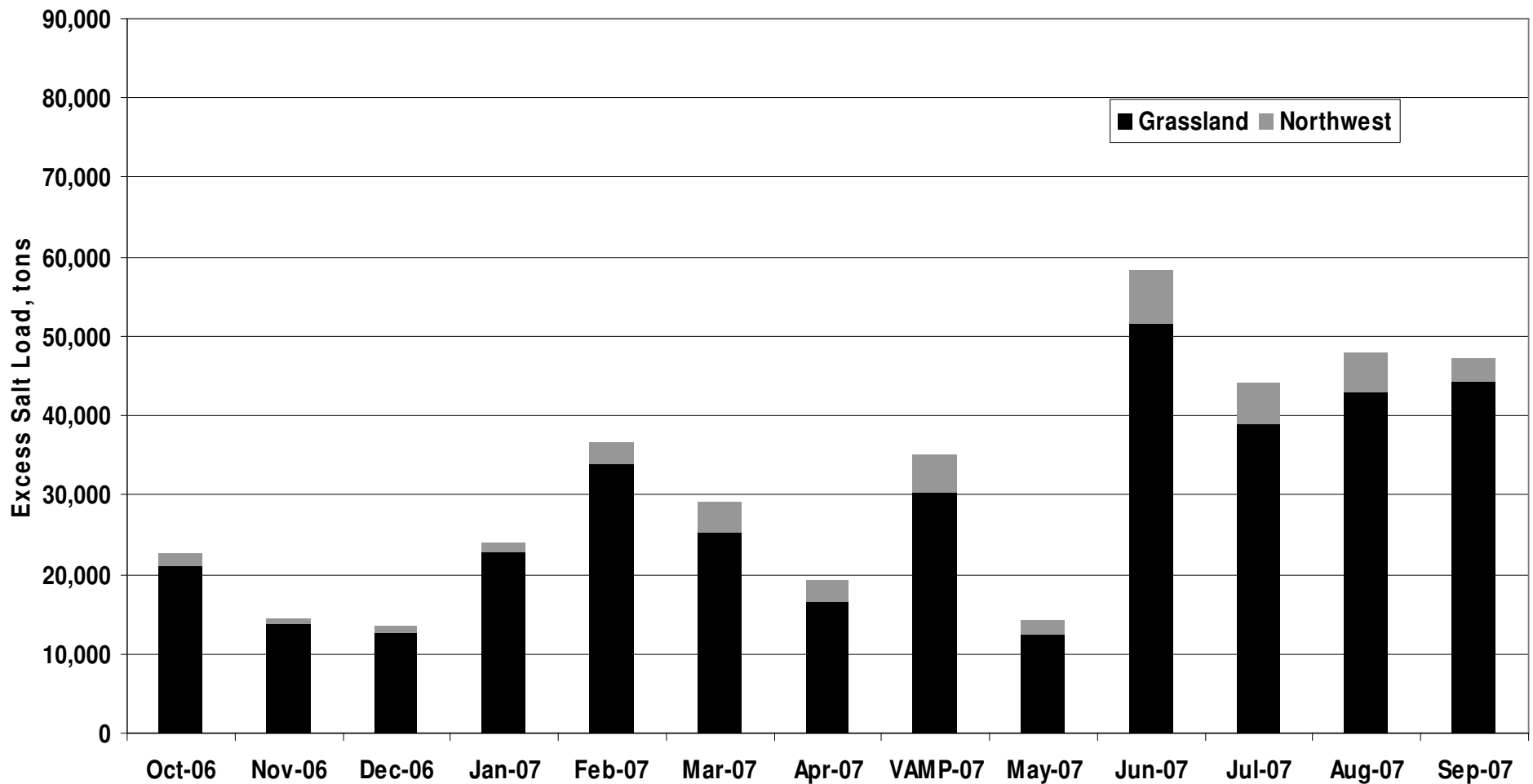
# CVP-Delivered Salt “Excess” Load Monthly Loads 2005 (W)



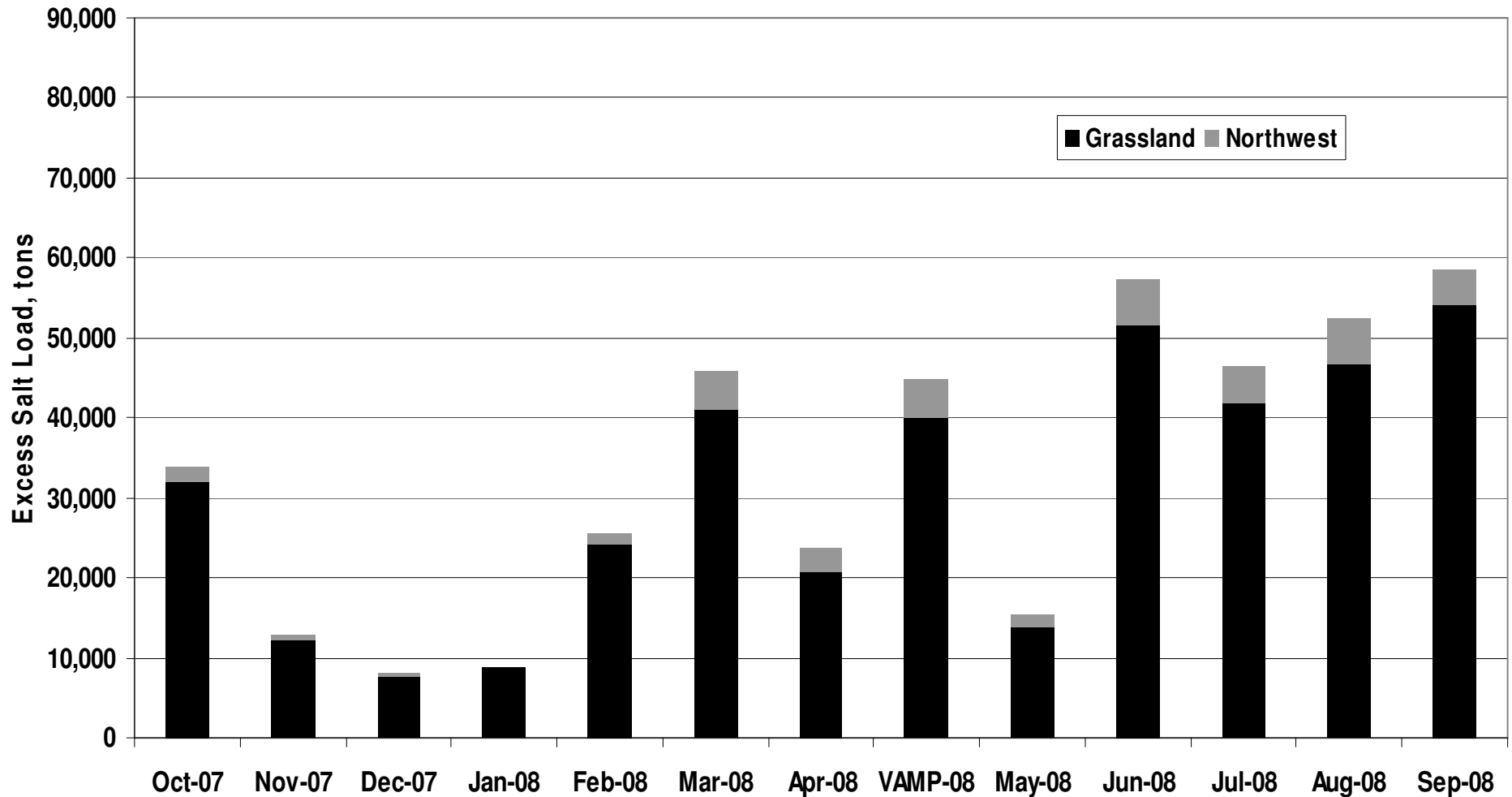
# CVP-Delivered Salt “Excess” Load Monthly Loads 2006 (W)



# CVP-Delivered Salt “Excess” Load Monthly Loads 2007 (C)

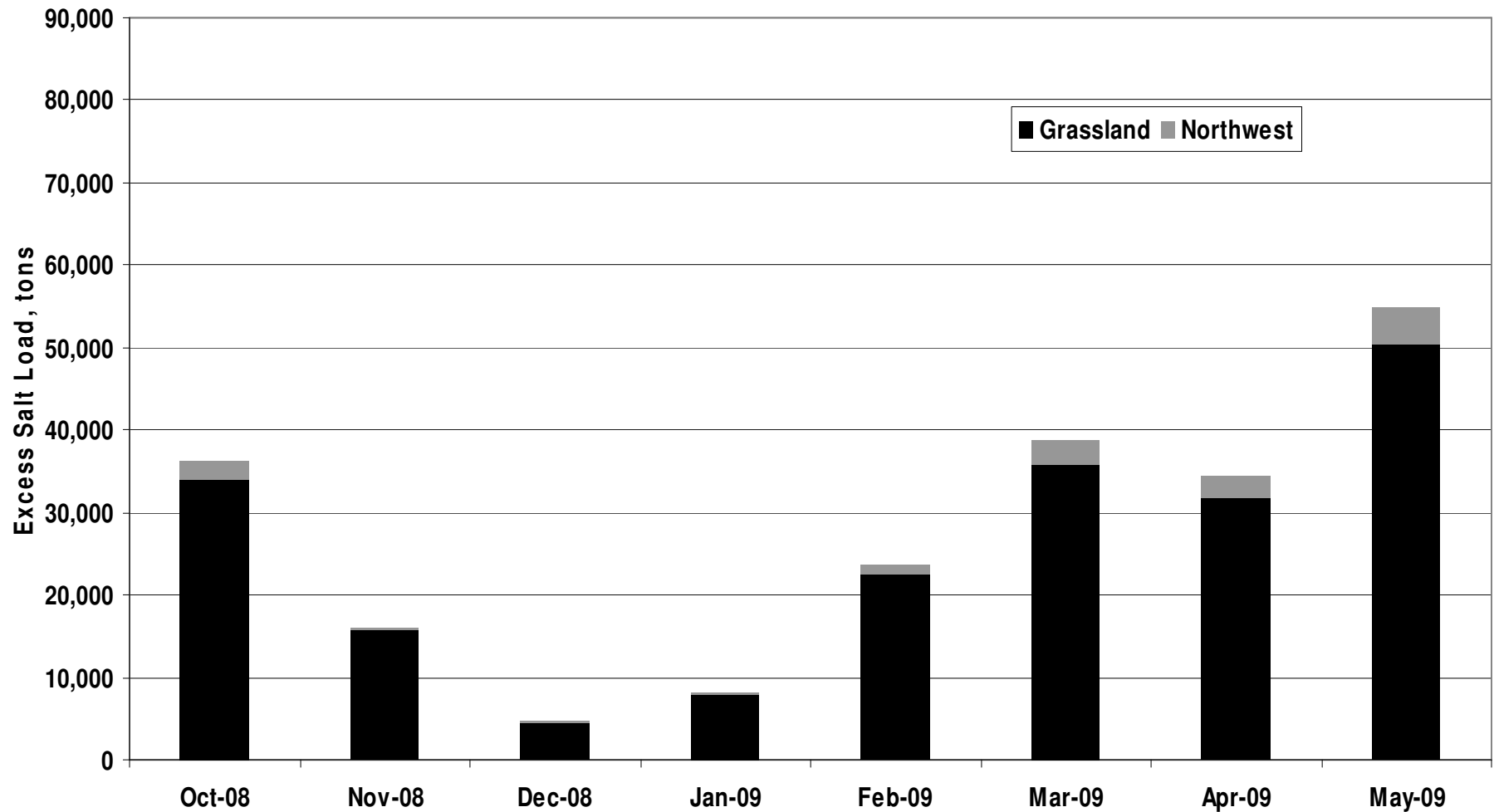


# CVP-Delivered Salt “Excess” Load Monthly Loads 2008 (C)





# CVP-Delivered Salt “Excess” Load Monthly Loads 2009 (D or C?)



# Proposed Ongoing Review Process

## **July 28: CVP Delivered Load**

Data Sources, Calculations

## **August 4: Westside Regional Drainage Plan**

Subarea Load Calculations, Groundwater Load  
CVP Water Supply Credit, Assimilative Capacity

## **August 24: Eastside Tributary Dilution Flows**

Subarea Load Calculations, Assimilative Capacity

## **August 17 : Unquantified Subareas**

Data Availability, Subarea load quantification

## **TBD: Real-Time Management Program**

Status of Efforts, Assimilative Capacity, Potential Uses

## **TBD: Offsets, Credits, Trading**

Application of Potential Offsets, Credits to CVP-Delivered Loads

# Contacts

## Draft Plan is posted at:

[http://www.waterboards.ca.gov/centralvalley/water\\_issues/tmdl/central\\_valley\\_projects/vernalissalt\\_boron/](http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/vernalissalt_boron/)

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